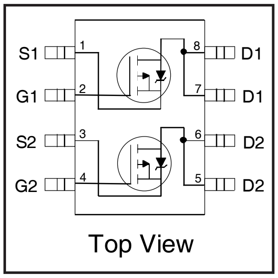
International
IOR Rectifier

PD - 96109

IRF7342QPbF

HEXFET® Power MOSFET

- Advanced Process Technology
- Ultra Low On-Resistance
- Dual P Channel MOSFET
- Surface Mount
- Available in Tape & Reel
- 150°C Operating Temperature
- Automotive [Q101] Qualified
- Lead-Free



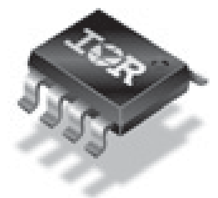
$V_{DSS} = -55V$

$R_{DS(on)} = 0.105\Omega$

Description

Specifically designed for Automotive applications, these HEXFET® Power MOSFET's in a Dual SO-8 package utilize the lastest processing techniques to achieve extremely low on-resistance per silicon area. Additional features of these Automotive qualified HEXFET Power MOSFET's are a 150°C junction operating temperature, fast switching speed and improved repetitive avalanche rating. These benefits combine to make this design an extremely efficient and reliable device for use in Automotive applications and a wide variety of other applications.

The efficient SO-8 package provides enhanced thermal characteristics and dual MOSFET die capability making it ideal in a variety of power applications. This dual, surface mount SO-8 can dramatically reduce board space and is also available in Tape & Reel.


SO-8

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{DS}	Drain- Source Voltage	-55	V
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V	-3.4	A
I_D @ T_C = 70°C	Continuous Drain Current, V_{GS} @ 10V	-2.7	
I_{DM}	Pulsed Drain Current ①	-27	
P_D @T_C = 25°C	Power Dissipation	2.0	W
P_D @T_C = 70°C	Power Dissipation	1.3	
	Linear Derating Factor	0.016	W/°C
V_{GS}	Gate-to-Source Voltage	± 20	V
V_{GSM}	Gate-to-Source Voltage Single Pulse tp<10µs	30	V
E_{AS}	Single Pulse Avalanche Energy②	114	
dv/dt	Peak Diode Recovery dv/dt ③	5.0	V/ns
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to + 150	°C

Thermal Resistance

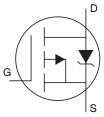
	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Maximum Junction-to-Ambient⑤	——	62.5	°C/W

07/23/07

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	-55	—	—	V	V_{GS} = 0V, I_D = -250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	—	-0.054	—	V/°C	Reference to 25°C, I_D = -1mA
$R_{DS(on)}$	Static Drain-to-Source On-Resistance	—	0.095	0.105	Ω	V_{GS} = -10V, I_D = -3.4A ④
		—	0.150	0.170		V_{GS} = -4.5V, I_D = -2.7A ④
$V_{GS(th)}$	Gate Threshold Voltage	-1.0	—	—	V	V_{DS} = V_{GS}, I_D = -250μA
g_{fs}	Forward Transconductance	3.3	—	—	S	V_{DS} = -10V, I_D = -3.1A
I_{DSS}	Drain-to-Source Leakage Current	—	—	-2.0	μA	V_{DS} = -55V, V_{GS} = 0V
		—	—	-25		V_{DS} = -55V, V_{GS} = 0V, T_J = 55°C
I_{GSS}	Gate-to-Source Forward Leakage	—	—	-100	nA	V_{GS} = -20V
	Gate-to-Source Reverse Leakage	—	—	100		V_{GS} = 20V
Q_g	Total Gate Charge	—	26	38	nC	I_D = -3.1A
Q_{gs}	Gate-to-Source Charge	—	3.0	4.5		V_{DS} = -44V
Q_{gd}	Gate-to-Drain ("Miller") Charge	—	8.4	13		V_{GS} = -10V, See Fig. 10 ④
$t_{d(on)}$	Turn-On Delay Time	—	14	22	ns	V_{DD} = -28V
t_r	Rise Time	—	10	15		I_D = -1.0A
$t_{d(off)}$	Turn-Off Delay Time	—	43	64		R_G = 6.0Ω
t_f	Fall Time	—	22	32		R_D = 16Ω, ④
C_{iss}	Input Capacitance	—	690	—	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	—	210	—		V_{DS} = -25V
C_{rss}	Reverse Transfer Capacitance	—	86	—		f = 1.0MHz, See Fig. 9

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2.0	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-27		
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	T_J = 25°C, I_S = -2.0A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	—	54	80	ns	T_J = 25°C, I_F = -2.0A
Q_{rr}	Reverse RecoveryCharge	—	85	130	nC	di/dt = -100A/μs ③

Notes:

① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)

② Starting T_J = 25°C, L = 20mH
R_G = 25Ω, I_{AS} = -3.4A. (See Figure 8)

③ $I_{SD} \leq -3.4A$, di/dt ≤ -150A/μs, $V_{DD} \leq V_{(BR)DSS}$,
$T_J \leq 150°C$

④ Pulse width ≤ 300μs; duty cycle ≤ 2%.

⑤ When mounted on 1 inch square copper board, t<10 sec

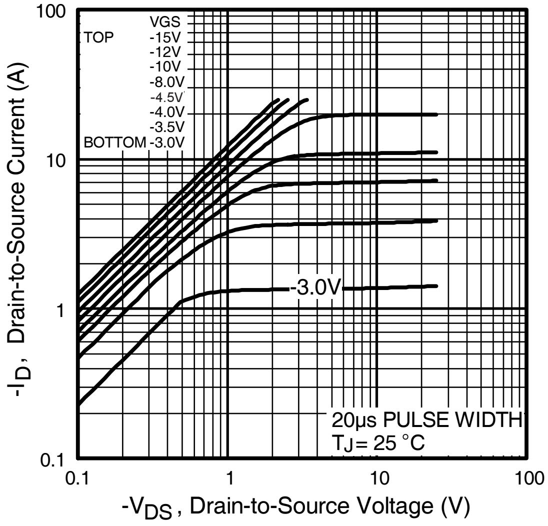


Fig 1. Typical Output Characteristics

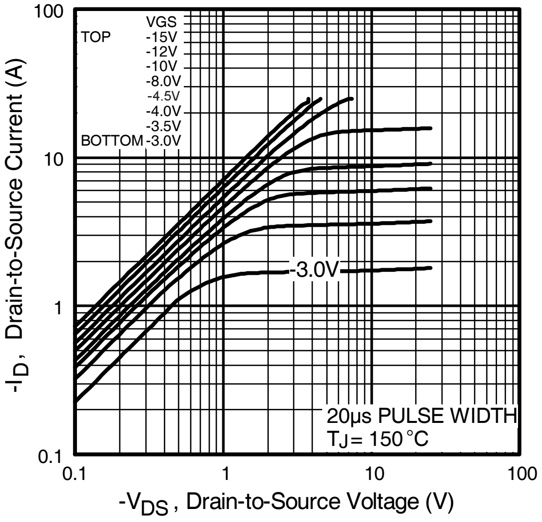


Fig 2. Typical Output Characteristics

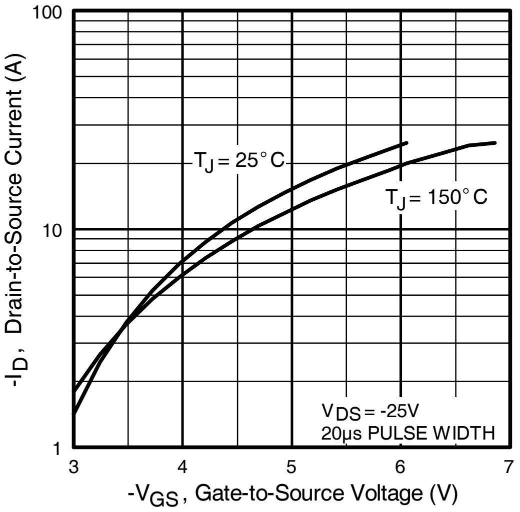


Fig 3. Typical Transfer Characteristics

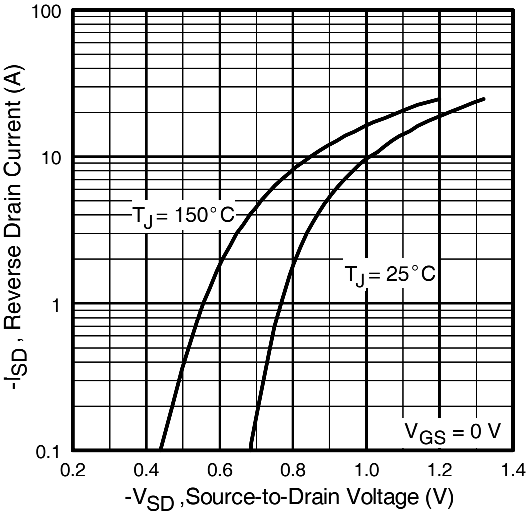


Fig 4. Typical Source-Drain Diode Forward Voltage

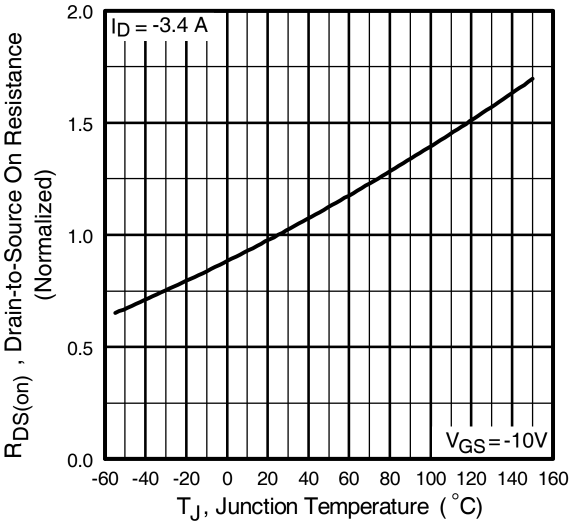


Fig 5. Normalized On-Resistance Vs. Temperature

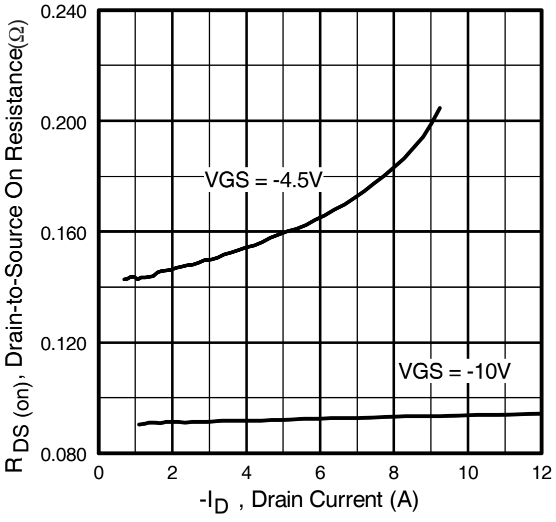


Fig 6. Typical On-Resistance Vs. Drain Current

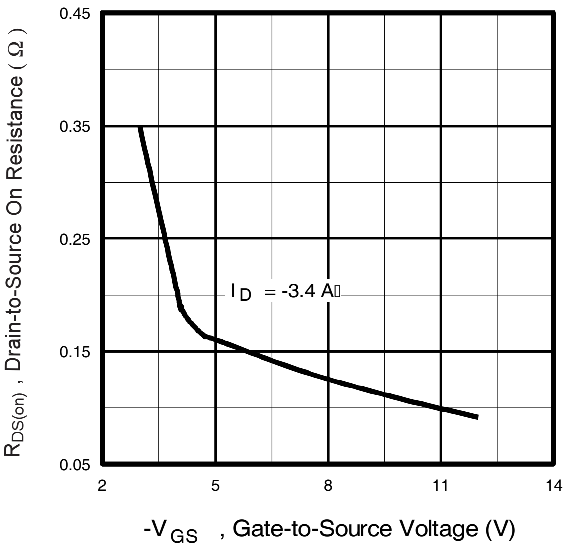


Fig 7. Typical On-Resistance Vs. Gate Voltage

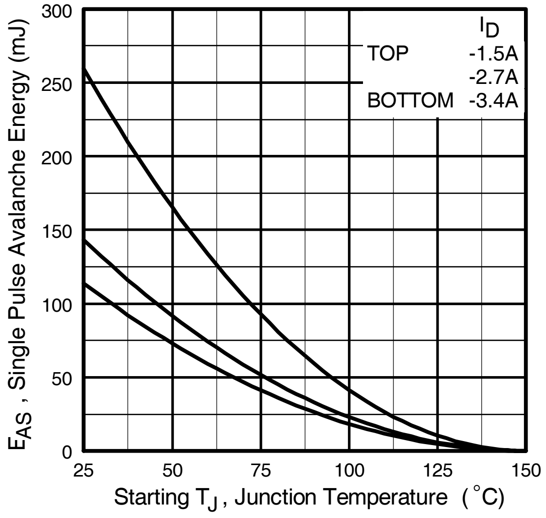


Fig 8. Maximum Avalanche Energy Vs. Drain Current

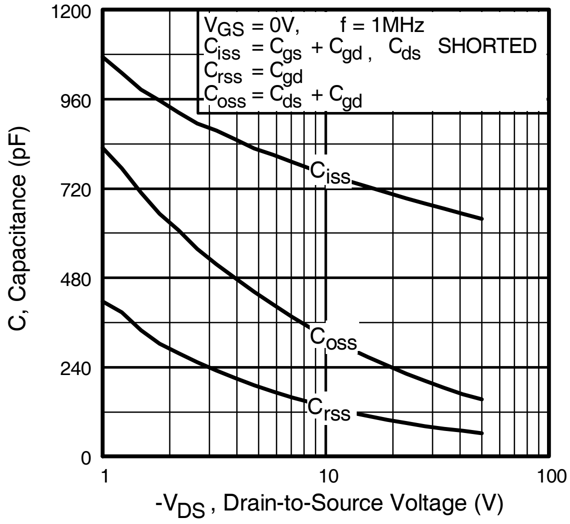


Fig 9. Typical Capacitance Vs. Drain-to-Source Voltage

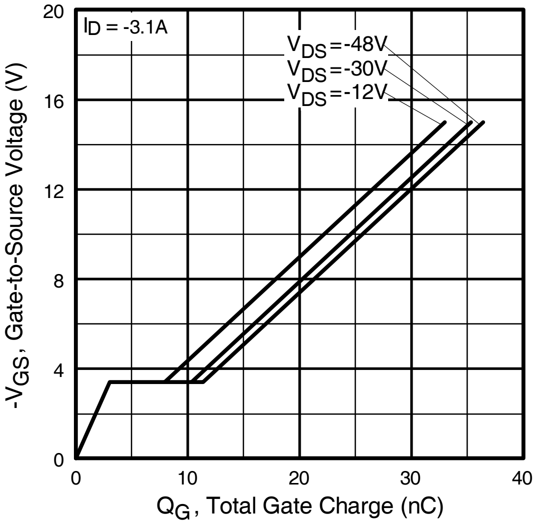


Fig 10. Typical Gate Charge Vs. Gate-to-Source Voltage

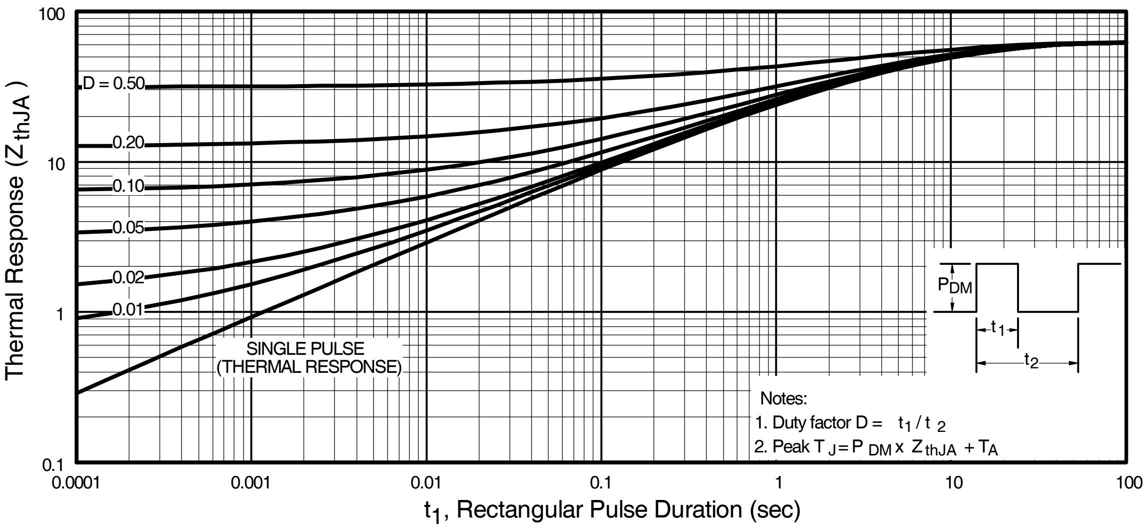
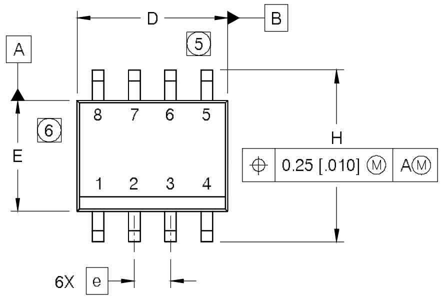


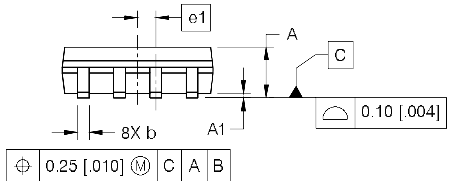
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

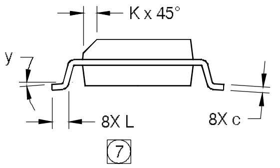
SO-8 Package Outline

Dimensions are shown in millimeters (inches)



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.0532	.0688	1.35	1.75
A1	.0040	.0098	0.10	0.25
b	.013	.020	0.33	0.51
c	.0075	.0098	0.19	0.25
D	.189	.1968	4.80	5.00
E	.1497	.1574	3.80	4.00
e	.050 BASIC		1.27 BASIC	
e 1	.025 BASIC		0.635 BASIC	
H	.2284	.2440	5.80	6.20
K	.0099	.0196	0.25	0.50
L	.016	.050	0.40	1.27
y	0°	8°	0°	8°





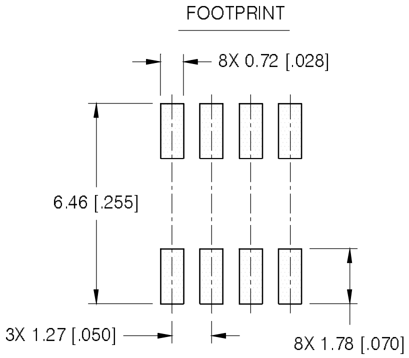
NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.

⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [.006].

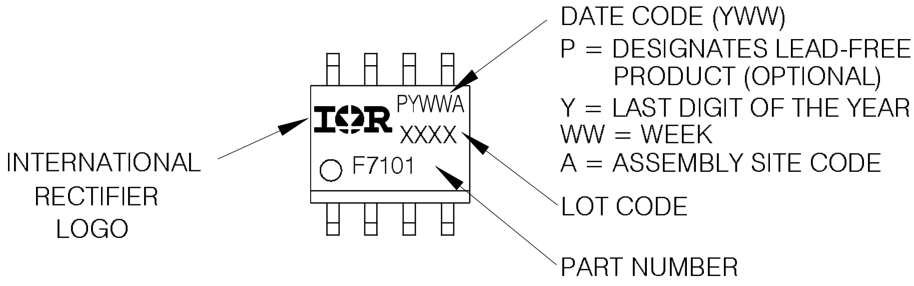
⑥ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [.010].

⑦ DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.



SO-8 Part Marking

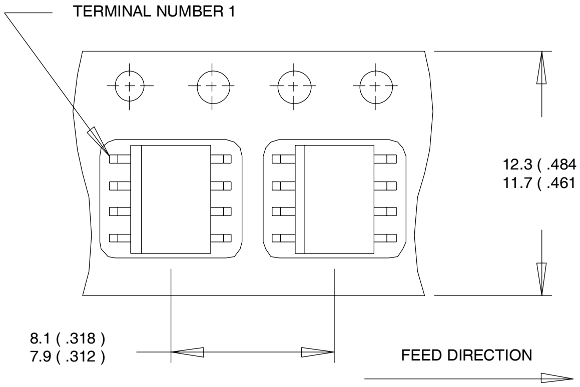
EXAMPLE: THIS IS AN IRF7101 (MOSFET)



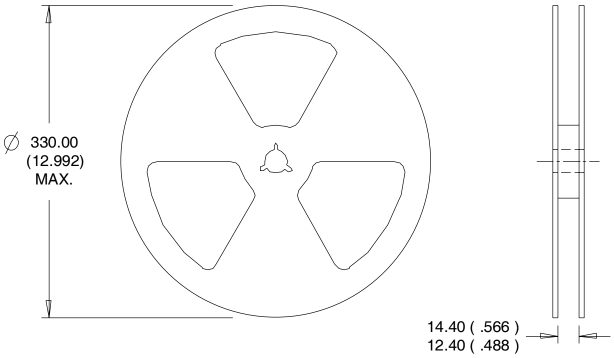
Note: For the most current drawing please refer to IR website at http://www.irf.com/package/

SO-8 Tape and Reel

Dimensions are shown in millimeters (inches)



NOTES:
1. CONTROLLING DIMENSION : MILLIMETER.
2. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS(INCHES).
3. OUTLINE CONFORMS TO EIA-481 & EIA-541.



NOTES :
1. CONTROLLING DIMENSION : MILLIMETER.
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Data and specifications subject to change without notice.
This product has been designed and qualified for the Automotive [Q101] market.
Qualification Standards can be found on IR's Web site.

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